

Application No.: 10/633,015
Applicant: Elena Pavloskaia
Title: Systems and methods for
removing gingiva from computer tooth models
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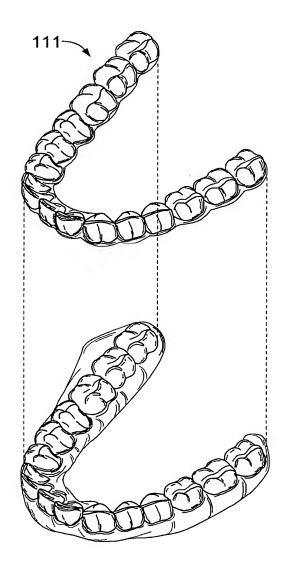


FIG. 1C



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DIGITIZE INITIAL TOOTH ARRANGEMENT TO PRODUCE INITIAL DIGITAL DATA SET (IDDS) 202 MANIPULATE IDDS TO PRODUCE FINAL DIGITAL DATA SET (FDDS) CORRESPONDING TO A DESIRED FINAL TOOTH ARRANGEMENT 204 GENERATE MULTIPLE INTERMEDIATE DIGITAL DATA SETS (INTDDS'S) CORRESPONDING TO SUCCESSIVE TOOTH ARRANGEMENTS FROM **INITIAL TO FINAL** 206 PRODUCE INCREMENTAL POSITION ADJUSTMENT APPLIANCES BASED ON INTDDS'S AND FDDS 208

FIG. 2



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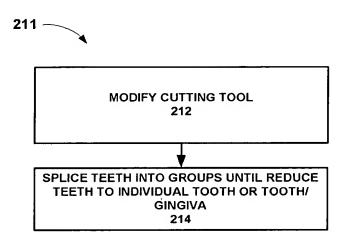


FIG. 4



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FIND GINGIVAL LINE SEPARATING CROWN
SURFACE FROM GINGIVAL SURFACE OF
TOOTH MODEL
230

CREATE SURFACE MODEL PASSING
THROUGH GINGIVAL LINE
250

CLIP GINGIVA FROM TOOTH
260

220 —

FIG. 5



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CUT GINGIVA FROM TOOTH
262

RECONSTRUCT ROOT OF TOOTH
264

GENERATE CUT OUT OF GINGIVAL PORTION
OF TOOTH AND CROWN PORTIONS
266

FIG. 9

270 -

COMPUTE TANGENT DIRECTIONS FROM A
POINT ON GINGIVAL LINE TO CROWN
PORTION OF TOOTH
272

SELECT TANGENTS FARTHEST FROM Z AXIS
274

LOCATE CROWN CONTROL POINTS DEFINING
CROWN SURFACE OF GINGIVAL CUT
276

FIG. 10



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